



# Opportunistic Infections (OIs) in HIV/AIDS

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"Guidelines" refers to information adapted from Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents. April 10th, 2009. MMWR 2009; 58 (RR-4) pp 1-198. www.aidsinfo.nih.gov/contentfiles/Adult\_OI\_041009.pdf. See Guidelines for Rating scheme/level of evidence definitions. www.aidsinfo.nih.gov/contentfiles/Adult\_OI\_041009.pdf#page=4.

Preferred OI Primary Prophylaxis		
NOTE: See inside of card for alternative OI prophylaxis regimens		
Indication	Infection	Preferred Regimen
CD4 < 200 (AI) or % CD4 < 14% or oropharyngeal candidiasis (AII) <sup>1</sup>	<i>Pneumocystis jirovecii</i> pneumonia (PCP)	TMP/SMX - 1 DS po once daily (AI) or TMP/SMX - 1 SS po once daily (AI)
CD4 < 100 and toxoplasma IgG + (AII) <sup>2</sup>	<i>Toxoplasma gondii</i> encephalitis	TMP/SMX - 1 DS po once daily (AII)
CD4 < 50 - after ruling out active MAC infection (AI) <sup>3</sup>	Disseminated <i>Mycobacterium avium</i> complex (MAC) disease	azithromycin - 1200 mg po qweek (AI) or clarithromycin - 500 mg po bid (AI) or azithromycin - 600 mg po 2x/week (BIII)

- Additional indications: hx of AIDS-defining illness (BII), CD4 201-249 if CD4 monitoring q1-3 months is not possible (BII)
- Retest Toxo IgG status if CD4 declines to < 100 and patient is receiving PCP prophylaxis not active versus toxoplasmosis (CIII)
- Disseminated MAC ruled out by clinical assessment (±) blood culture

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Generic Name	Brand Name	Generic Form	Dosage Forms	Food Restrictions
Acyclovir	Zovirax®	✓	200 mg cap, 400, 800 mg tab	☹ ☹
Amphotericin B deoxycholate	Fungizone®	✓	Injection (50 mg) vial	
Amphotericin B lipid complex	Abelcet®		Injection (100 mg/20 mL) vial	
Amphotericin B liposomal	Ambisome®		Injection (50 mg) vial	
Anidulafungin	Eraxis®		Injection (50, 100 mg) vial	
Atovaquone	Mepron®		750 mg/5mL oral susp (5 mL packet, 210 mL bottle)	☹
Azithromycin	Zithromax®	✓	250, 500, 600 mg tab	☹ ☹
Caspofungin	Cancidas®		Injection (50, 70 mg) vial	
Cidofovir	Vistide®		Injection (75 mg/mL; 5 mL) vial	
Clarithromycin	Biaxin®	✓	250, 500 mg tab, 500 mg ER tab	☹ ☹ ER ☹
Clindamycin	Cleocin®	✓	150, 300 mg cap	☹ ☹
Clotrimazole	Mycelex®	✓	10 mg troche	☹ ☹
Dapsone		✓	25, 100 mg tab	☹ ☹
Ethambutol	Myambutol®	✓	100, 400 mg tab	☹
Famciclovir	Famvir®	✓	125, 250, 500 mg tab	☹ ☹
Fluconazole	Diflucan®	✓	50, 100, 150, 200 mg tab	☹ ☹
Flucytosine	Ancobon®		250, 500 mg cap	☹ ☹
Foscarnet	Foscavir®	✓	Injection (24 mg/mL; 250, 500 mL) vial	
Ganciclovir	Cytovene®		Injection (500 mg) vial	
Ganciclovir intraocular implant	Vitrasert®		4.5 mg	
Itraconazole	Sporanox®	✓	100 mg cap, 100 mg/10 mL oral soln, 10 mg/mL injection	caps ☹ ☹
Leucovorin calcium (Folinic acid)		✓	5, 10, 25 mg tab	☹ ☹
Micafungin	Mycamine®		Injection (50, 100 mg) vial	
Nitazoxanide	Alinia®		500 mg tab, 100 mg/5 mL oral susp	☹
Nystatin	Mycostatin®	✓	100,000 units/mL oral susp	☹ ☹
Penicillin G Benzathine	Bicillin-L-A®		Injection (600,000 units/mL; 1, 2, 4 mL)	
Pentamidine	NubuPen®, Pentam-300®	✓	Inhalation (300 mg) vial, Injection (300 mg) vial	
Posaconazole	Noxafil®		200 mg/5 mL oral susp	☹
Primaquine		✓	26.3 mg tab	☹
Probenicid		✓	500 mg tab	☹
Pyrimethamine	Daraprim®		25 mg tab	☹
Rifabutin	Mycobutin®		150 mg cap	☹
Sulfadiazine		✓	500 mg	☹ ☹
Trimethoprim/sulfamethoxazole (TMP/SMX)	Septra®, Bactrim®	✓	TMP/SMX component: 160 mg/800 mg (DS tab), 80 mg/400 mg (SS tab), 80 mg/400 mg per 5 mL oral susp, Injection (16 mg/80 mg per mL)	☹ ☹
Valacyclovir	Valtrex®		500, 1000 mg cap	☹ ☹
Valganciclovir	Valcyte®		450 mg tab	☹
Voriconazole	Vfend®		50, 200 mg tab	☹

Give azithromycin 1 hour before or 2 hours after giving aluminum/magnesium-containing antacids

See package insert for formulations and instructions

Do not administer with antacids or alkaline food/drugs

Acid reducing agents ↓ itraconazole absorption. Administer antacids ≥ 1 hour before or 2 hours after itraconazole. Administer with cola beverage if used with other acid reducing agents.

Tab at least one hour before or after meals

☹ = Liquid available ☹☹ = Injection available ☹☹☹ = Take with food ☹☹☹☹ = Take without food

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Immunologic Reconstitution Inflammatory Syndrome (IRIS)

- Do not alter antitubercular tx
- If signs of CNS inflammation with ↓ ICP consider corticosteroids
- 0.5-1 mg/kg per day of prednisone equivalent or higher doses if needed for 2-6 weeks with careful monitoring of patient (BIII)
- Not enough data to make a recommendation regarding role for nonsteroidal anti-inflammatory drugs or thalidomide (CIII)

Change in treatment needed

- If culture positive at relapse, check susceptibilities to see if change in treatment needed
- Restart induction tx for additional 2 weeks
- Induction tx stopped and 2 week CSF culture is positive.
- Results of CSF culture anticipated to be positive
- Persistent ↑, symptomatic ICP
- Comatose or clinically deteriorating

of following conditions:

- Extend induction tx for additional 1-6 weeks if patient has any symptoms. (+) CSF at this point predicts relapse and poorer outcome.
- After first 2 weeks of tx, repeat LP (only if recurrent signs & manage IRIS
- Corticosteroids (AII) not recommended unless needed to
- Mannitol (AIII), acetazolamide (AII) are not recommended control ICP have failed (BIII)
- Consider permanent CSF shunt only if other measures to ventriculostomy if daily LP required (BIII)
- and ICP stable for > 2 days; consider lumbar drain or LP persistently ≥ 25 cm H<sub>2</sub>O, daily LP until symptoms (BIII)
- 20-30 mL CSF removed (BII)
- If opening pressure ≥ 25 cm H<sub>2</sub>O and patient has symptoms of ↑ ICP, LP to reduce ICP by 50% or to < 20 cm H<sub>2</sub>O (usually ≥ 4-6 weeks (AII))
- At diagnosis, all patients need cerebrospinal fluid (CSF) opening intracranial pressure (ICP) measured (if focal neurologic deficits or impaired mental status, await results of CT scan or MRI before doing LP) (BII)

### Treatment Monitoring:

NOTE: For those not already on ART, start ART 2-10 weeks after initiation of antifungal tx

Failure or high fungal burden

- Do not use for esophageal candidiasis
- Amphotericin B oral susp 100 mg/mL - 1 mL po 4x/day (CIII), not available in US, can be compounded by some pharmacies
- Voriconazole 200 mg po or IV bid (CIII) ☹
- Micafungin 150 mg IV once daily (CII) ☹
- Caspofungin 50 mg IV once daily (CII) ☹
- Anidulafungin 100 mg IV x 1 dose, then 50 mg IV once daily (BII) ☹
- Lipid formulation of amphotericin B 3-5 mg/kg IV once daily (BII) ☹
- Amphotericin B deoxycholate 0.3-0.7 mg/kg IV once daily (BII) ☹
- Alternative, duration based on tx response:
- Posaconazole 400 mg po bid (AII)
- Itraconazole oral soln ≥ 200 mg po once daily (AII) ☹

### Fluconazole-Retractory Oro/Esophageal Candidiasis:

### CANDIASIS (continued)

### CRYPTOCOCCAL MENINGITIS (CONTINUED)

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NOTE: See the Cryptococcal guidelines referenced above for and/or management of asymptomatic antigenemia

2010 Update by the Infections Diseases Society of America. Clinical Infectious Diseases 2010; 50: 291-322 Available online at: www.idsociety.org/content.aspx?id=920#crp.

7. Clinical Practice Guidelines for the Management of Cryptococcal Disease:

- Amphotericin B deoxycholate (AmBd) 0.7 to 1 mg/kg IV once daily + flucytosine 25 mg/kg/dose po given 4x/day followed by fluconazole 400 mg po once daily x 8 weeks (A1)
- 500 mL normal saline preinfusion may ↑ nephrotoxicity risk
- Retreatment with acetaaminophen and diphenhydramine may ↑ infusion-related adverse events
- In patients who develop renal dysfunction on tx or who have ↑ risk of renal dysfunction, liposomal AmB (Ambisome®) or AmB lipid complex (ALBC, Abelcet®) 3-4 mg/kg IV once daily or AmB lipid complex (ALBC, Abelcet®) 5 mg/kg IV once daily + flucytosine (dose ↑ flucytosine if CrCl > 40 mL/min) as above for ≥ 2 weeks (BII)

### Induction/Consolidation Therapy:

### CRYPTOCOCCAL MENINGITIS

- Itraconazole oral soln 200 mg po once daily x 3-7 days (BII)

Alternative:

- If severe or recurrent give fluconazole 150 mg every q72h x 2-3 doses or use topical azole for ≥ 7 days (AII)

### Uncomplicated Vulvovaginal Candidiasis:

- Fluconazole 150 mg po x 1 dose (AII) ☹
- Topical azole (clotrimazole, butoconazole, tioconazole, or terconazole) x 3-7 days (AII)
- If severe or recurrent give fluconazole 150 mg every q72h x 2-3 doses or use topical azole for ≥ 7 days (AII)

### Secondary Prevention:

- Prophylaxis not routinely indicated. If recurrences are frequent or severe, consider suppressive therapy
- Patient with fluconazole-refractory oropharyngeal who responded to echinocandins, voriconazole or posaconazole, should continue therapy until ART results in immune reconstitution (C1)

6. See [www.aidsinfo.nih.gov/contentfiles/Adult\\_OI\\_041009.pdf#page=157](http://www.aidsinfo.nih.gov/contentfiles/Adult_OI_041009.pdf#page=157).

5. Chambers HF, Eliopoulos GM, Gilbert DN, Moellering RC, Saag MS, Sanford Guide to Antimicrobial Therapy, 2009, 39th ed. Sperryville, VA: Antimicrobial Therapy; 2009.

8. Liposomal AmB may be given in doses up to 6 mg/kg IV once daily in cases of its discouraged and interactions with ART need to be considered.

- Itraconazole 200 mg po bid for ≥ 10-12 weeks (CII). Use of this option po for ≥ 10-12 weeks (BII)
- Fluconazole 800-2000 mg (≥ 1200 mg per day preferred) per day flucytosine (dose as preferred tx) for ≥ 6 weeks (BII)
- Fluconazole ≥ 800 mg (1200 mg preferred) per day po plus 2 weeks followed by fluconazole 800 mg once daily for ≥ 8 weeks (B1)
- AmBd 0.7 to 1 mg/kg IV once daily + fluconazole 800 mg once daily for ≥ 4-6 weeks (AII)
- AmBd, liposomal AmB®, or ABLC (dose as preferred tx) alone for Alternative:

### Fluconazole-Retractory Oro/Esophageal Candidiasis:

### CANDIASIS (continued)

### CRYPTOCOCCAL MENINGITIS (CONTINUED)

- Fluconazole 100-400 mg po or IV once daily (A1) ☹
- Itraconazole oral soln 200 mg po once daily (A1)
- Voriconazole 200 mg po or IV bid (B1) ☹
- Posaconazole 400 mg po bid (B1) ☹
- Caspofungin 50 mg IV once daily (B1) ☹
- Micafungin 150 mg IV once daily (B1) ☹
- Anidulafungin 100 mg IV x 1 dose, then 50 mg IV once daily (B1)

Preferred, 14-21 day tx:

Alternative, 14-21 day tx:

### Esophageal Candidiasis:

- Fluconazole 100 mg po once daily (A1) ☹
- Clotrimazole troches 10 mg dissolved po 5x/day (BII) ☹
- Nystatin oral susp 4-6 mL swish and swallow 4x/day (BII) ☹
- 1-2 flavored pastilles 4-5 x/day (BII) ☹
- Miconazole mucoadhesive tab po once daily (BII)
- Itraconazole oral susp 400 mg po bid x 1 day, then 400 mg po once daily (B1)
- Posaconazole oral susp 400 mg po bid x 1 day, then 400 mg po once daily (B1)

### Oropharyngeal Candidiasis:

### CANDIASIS

### Treatment of OIs and Chronic Maintenance

### Therapy/Secondary Prevention

### Discontinuation of Primary Prophylaxis:

- PCP: CD4 > 200 for > 3 months in response to ART (A1), reinstitute if CD4 falls to < 200 (AIII)
- Toxoplasmosis: CD4 > 200 for > 3 months in response to ART (A1), reinstitute if CD4 falls to < 100-200 (AIII)
- MAC: CD4 > 100 for ≥ 3 months in response to ART (A1), reinstitute if CD4 falls to < 50 (AIII)

4. See Tables 14 and 15 in the DHHS Adult/Adolescent Treatment Guidelines (Updated January 10, 2011 for updated rifampin/ART drug interaction information. [www.aidsinfo.nih.gov/contentfiles/AdultAndAdolescentGL.pdf#page=141](http://www.aidsinfo.nih.gov/contentfiles/AdultAndAdolescentGL.pdf#page=141)

ARVs, dosage adjustments may be required

### Disseminated MAC (Alternatives):

- Rifabutin 300 mg po once daily (B1) NOTE: Interacts with many ARVs.
- Itraconazole 200 mg po qweek (B1)
- Dapsone 50 mg po once daily + pyrimethamine 50 mg + TMP/SMX 1 SS po once daily (BIII)
- Dapsone 50 mg po once daily + pyrimethamine 50 mg + TMP/SMX 1 DS po 3x/week (BII)
- Leucovorin 10 mg po once daily (CIII)
- Atovaquone 1500 mg po once daily (B1)
- Leucovorin 10 mg po once daily (CIII)

### PCP (Alternatives):

- TMP/SMX 1 DS po 3x/week (B1)
- Dapsone 50 mg po once daily + pyrimethamine 50 mg + nebulizer (B1)
- Aerolized pentamidine 300 mg monthly via Respigard II™
- Atovaquone 1500 mg po once daily (B1)
- Leucovorin 10 mg po once daily (CIII)
- Leucovorin 25 mg po qweek (B1)
- Dapsone 50 mg po once daily + pyrimethamine 50 mg + TMP/SMX 1 DS po 3x/week (B1)
- Leucovorin 10 mg po once daily (CIII)

### Toxoplasmosis (Alternatives):

- TMP/SMX 1 DS po 3x/week (BII)
- Dapsone 50 mg po once daily + pyrimethamine 50 mg + nebulizer (B1)
- Atovaquone 1500 mg po once daily (B1)
- Leucovorin 10 mg po once daily (CIII)

## Treatment of OIs and Chronic Maintenance Therapy/Secondary Prevention (Continued)

### CRYPTOCOCCAL MENINGITIS (Continued)

#### Cryptococcal Meningitis

##### Maintenance/Suppressive Therapy:

- Fluconazole 200 mg po once daily (AI)
- Itraconazole 200 mg po bid, therapeutic drug monitoring recommended, consider interactions with ART (CI)
- AmBd 1 mg/kg IV once weekly (consider only in azole intolerant patients as it is less effective and may lead to catheter infections) (CI)

##### Discontinuation of Maintenance/Suppressive Therapy:

After ≥ 12 months of antifungal tx, consider stopping suppressive tx in patients virologically controlled on ART with CD4 ≥ 100 for ≥ 3 months (BII). Restart if CD4 ↓ to < 100 (BIII).

#### Cryptosporidiosis:

##### Preferred:

- Initiate or optimize ART (AII), anti-diarrheal agents as needed as well as adequate fluid replacement (AIII)

##### Alternative:

- Nitazoxanide 500-1000 mg po bid x 14 days (CIII) + optimized ART, symptomatic tx, rehydration and electrolyte replacement

### CYTOMEGALOVIRUS DISEASE (CMV)<sup>9</sup>

9. Ganciclovir, valganciclovir and foscarnet require renal dosage adjustments. Caution regarding additive bone marrow toxicity with zidovudine + (ganciclovir or valganciclovir)

#### CMV Retinitis Acute Treatment:

##### Preferred (Immediate sight-threatening lesions):

- Ganciclovir intraocular implant + valganciclovir 900 mg po bid x 14-21 days, then once daily (AI)
- One dose intravitreal ganciclovir may be given after diagnosis until intraocular implant can be placed (CIII)

##### Preferred (Small peripheral lesions):

- Valganciclovir 900 mg po bid x 14-21 days, then 900 mg po once daily (BII)

##### Alternative:

- Ganciclovir 5 mg/kg IV q12h x 14-21 days then (ganciclovir 5 mg/kg IV once daily or valganciclovir 900 mg po once daily) (AI) **or**
- Foscarnet 60 mg/kg IV q8h or 90 mg/kg IV q12h x 14-21 days, then 90-120 mg/kg IV q24h (AI) **or**
- Cidofovir 5 mg/kg IV qweek x 2 weeks, then 5 mg/kg IV every other week + saline hydration before and after tx + probenecid 2 g po 3 hours before dose followed by 1 g po x 2 doses (2 and 8 hours after cidofovir infusion) for total of 4 g. (AI) **NOTE:** Avoid in sulfa allergic; cross hypersensitivity with probenecid

#### CMV Retinitis Chronic Maintenance Therapy:

##### Preferred:

- Valganciclovir 900 mg po once daily (AI) **or**
- Ganciclovir implant (may be replaced q6-8 months if CD4 remains < 100) + valganciclovir 900 mg po once daily until immune recovery (BIII)

##### Alternative:

- Ganciclovir 5 mg/kg IV 5-7 x/week (AI) **or**
- Foscarnet 90-120 mg/kg IV once daily (AI) **or**
- Cidofovir 5 mg/kg IV every other week + saline hydration + probenecid as above (AI)

#### CMV Esophagitis or Colitis:

- Ganciclovir or foscarnet IV x 21-28 days or until resolution of signs and symptoms (dose as for CMV retinitis acute tx) (BII)
- Oral valganciclovir may be considered if symptoms not severe enough to interfere with absorption (dose as for CMV retinitis acute tx) (BII)
- Maintenance tx usually not needed unless relapse (BII)

#### CMV Pneumonitis:

- Consider tx if histologic evidence of CMV pneumonitis and lack of response to tx of other pathogens (AIII)
- Maintenance tx role not established (CIII)

#### CMV Neurological Disease<sup>10</sup>:

- Dose as for CMV retinitis acute tx
- Initiate tx promptly with combination of ganciclovir IV + foscarnet IV to stabilize disease continue until symptomatic improvement (BII)
- Maintenance tx (with valganciclovir PO + foscarnet IV) should be continued for life unless immune recovery (BII)

10. *AIDS* 2000, 14:517-524

**NOTE:** When CD4 > 100 cells for 3-6 months due to ART, consideration can be given to stopping CMV maintenance tx

### HEPATITIS B AND C

Visit: [www.FCAETC.org/Hepatitis](http://www.FCAETC.org/Hepatitis) to download tools for tx and monitoring of hepatitis B and/or C HIV co-infected patients

### HERPES SIMPLEX VIRUS (HSV)

#### HSV Orolabial Lesions, Initial or Recurrent Genital:

- Acyclovir 400 mg po tid (AI) **or**
- Famciclovir 500 mg po bid (AI) **or**
- Valacyclovir 1 g po bid (AI)
- Duration of tx: 5-10 days orolabial or 5-14 days genital<sup>11</sup>

11. STD Treatment Guidelines 2010 state 5-10 days for orolabial or genital [www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=27](http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=27)

#### HSV Suppressive Therapy:

For patients with severe or frequent recurrences (AI)

- Acyclovir 400 mg po bid<sup>12</sup> **or**
- Famciclovir 500 mg po bid **or**
- Valacyclovir 500 mg po bid

12. STD Treatment Guidelines 2010 state acyclovir 400-800 mg bid to tid [www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=27](http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=27)

#### HSV Severe Mucocutaneous:

- Acyclovir 5 mg/kg IV q8h (AII) until lesions begin to improve then change to oral therapy as above for initial or recurrent

#### HSV Encephalitis:

- Acyclovir 10 mg/kg IV q8h x 21 days (AII)

#### Acyclovir-Resistant HSV<sup>13</sup>:

- Foscarnet 80-120 mg/kg/day IV in 2-3 divided doses until clinical response (21-28 days or longer) (AI)

13. See Guidelines for alternative tx [www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=26](http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=26)

### HERPES ZOSTER (VARICELLA ZOSTER VIRUS, VZV)<sup>14</sup>

14. For infections caused by acyclovir-resistant VZV, use foscarnet 90 mg/kg IV q12h

#### Herpes Zoster-Acute Localized Dermatomal:

- Acyclovir 800 mg po 5x/day (AII) **or**
- Famciclovir 500 mg po tid (AII) **or**
- Valacyclovir 1 g po tid (AII)
- Duration of tx: 7-10 days or > if lesions slow to resolve

### HERPES ZOSTER (VARICELLA ZOSTER VIRUS, VZV) (Continued)

#### Herpes Zoster-Extensive

##### Cutaneous or Visceral Involvement:

- Acyclovir 10-15 mg/kg IV q8h (AII) until patient clinically improving
- Switch to oral therapy with acyclovir, famciclovir, or valacyclovir (dosed as for acute localized dermatomal) when clinically improving to complete 10-14 day course (AIII)

#### Herpes Zoster-Progressive

##### Outer Retinal Necrosis (PORN):

- (Ganciclovir 5 mg/kg + foscarnet 90 mg/kg) IV q12h + twice weekly intravitreal (ganciclovir 2 mg/0.05 mL or foscarnet 1.2 mg/0.05 mL) (AIII)
- Optimization of ART is essential (AIII)

#### Herpes Zoster-Acute Retinal Necrosis (ARN):

- Acyclovir 10 mg/kg IV q8h x 10-14 days, then valacyclovir 1 g po tid x 6 weeks (AIII)

### HISTOPLASMA CAPSULATUM INFECTIONS (HISTOPLASMOSIS)

#### Disseminated Disease (Moderately severe to severe):

##### Preferred:

- Induction tx (≥ 2 weeks or until clinically improved) with liposomal amphotericin B 3 mg/kg IV once daily (AI), then maintenance tx with itraconazole (soln preferred) 200 mg po tid x 3 days, then 200 mg po bid for ≥ 12 months (AII)

##### Alternative:

- Amphotericin B deoxycholate 0.7 mg/kg IV once daily (BI) **or**
- Amphotericin B lipid complex 5 mg/kg IV once daily (CIII)
- Either for ≥ 2 weeks or until clinically improved, then itraconazole as above

#### Disseminated Disease (Less severe):

- Itraconazole as above for ≥ 12 months (AII)

#### Meningitis:

- Liposomal amphotericin B 5 mg/kg IV once daily for 4-6 weeks, then itraconazole 200 mg po bid-tid for ≥ 12 months and until resolution of CSF abnormalities (AII)

#### Long-Term Suppression:

- Itraconazole 200 mg po once daily for patients with severe disseminated or CNS infection (AII) or in patients who relapse (CIII)

### DISSEMINATED MYCOBACTERIUM AVIUM COMPLEX (MAC)

#### Treatment of Acute Infection and for Chronic Maintenance Therapy/Secondary Prophylaxis<sup>15</sup>:

##### Preferred:

- Clarithromycin 500 mg po bid + ethambutol 15 mg/kg po once daily (AI)

##### Alternative:

- Azithromycin 500-600 mg + ethambutol 15 mg/kg po once daily (AII)

15. Consider addition of 3rd or 4th agent for CD4 < 50, increased mycobacterial load, or patient not on effective ART. Caution regarding drug interactions if rifabutin added. See Tables 14 and 15 in the DHHS Adult/Adolescent Treatment Guidelines (updated January 10, 2011) for updated rifamycin/ART drug interaction information. [www.aidsinfo.nih.gov/contentfiles/AdultandAdolescentGL.pdf#page=141](http://www.aidsinfo.nih.gov/contentfiles/AdultandAdolescentGL.pdf#page=141)

##### Discontinuation of Secondary Prophylaxis:

- Consider if: asymptomatic, ≥ 12 months of tx completed, and CD4 > 100 for ≥ 6 months in response to ART
- Reinitiate secondary prophylaxis (regimen as for acute tx) if CD4 falls to < 100

### MYCOBACTERIUM TUBERCULOSIS

See *Treatment of Tuberculosis (TB) in HIV/AIDS, May 2011* [www.fcaetc.org/Treatment](http://www.fcaetc.org/Treatment)

### PNEUMOCYSTIS JIROVECI PNEUMONIA (PCP)

#### Moderate/Severe:

##### Preferred:

- TMP/SMX: 15-20 mg TMP/kg/day IV divided q6h-q8h (AI), switch to appropriate po dose after clinical improvement
- Duration of tx: 21 days (base on clinical improvement) (AII)

##### Alternative:

- Pentamidine 4 mg/kg IV once daily infused over ≥ 60 mins (AI), some experts ↓ dose to 3 mg/kg IV once daily due to toxicities (BI) **or**
- Primaquine 15-30 mg (base) po once daily + clindamycin 600-900 mg IV q6h-q8h or 300-450 mg po q6h-q8h (AI) (If possible, test for G6PD deficiency prior to use of primaquine)

#### Corticosteroids (PaO<sub>2</sub> < 70 mmHg on room air or alveolar-arteriol O<sub>2</sub> gradient > 35 mmHg) (AI):

- Prednisone (begun within 72 hours of anti-PCP tx): Days 1-5: 40 mg po bid; days 6-10: 40 mg po once daily; days 11-21: 20 mg po once daily
- IV methylprednisolone may be given as 75% of prednisone dose
- Benefits of steroid use after 72 hours unknown but most clinicians would use

#### Mild/Moderate:

##### Preferred:

- TMP/SMX 15-20 mg TMP/kg/day po divided tid (rounded to nearest DS tablet containing 160 mg of TMP per tablet, 2 DS tabs po tid for most adults) (AI)
- Duration of tx: 21 days (base on clinical improvement) (AII)

##### Alternative:

- Dapsone 100 mg po once daily + TMP 15 mg/kg/day po divided tid (BI) **or**
- Primaquine 15-30 mg (base) po once daily + clindamycin 300-450 mg po q6h-q8h (BI) **or**
- Atovaquone 750 mg po bid (BI)

#### Secondary Prophylaxis:

##### Preferred:

- TMP/SMX 160 mg/800 mg 1 DS tab po once daily (AI) **or**
- TMP/SMX 80 mg/400 mg 1 SS tab po once daily (AI)

##### Alternative:

- TMP/SMX 160 mg/800 mg 1 DS tab po 3x/week (BI) **or**
- Dapsone 50 mg po bid or 100 mg po once daily (BI) **or**
- Dapsone 50 mg po once daily + (pyrimethamine 50 mg + leucovorin 25 mg) po qweek (BI) **or**
- (Dapsone 200 mg + pyrimethamine 75 mg + leucovorin 25 mg) po qweek (BI) **or**
- Aerosolized pentamidine 300 mg monthly via Respigard II™ nebulizer (BI) **or**
- Atovaquone 1500 mg po once daily (BI) **or**
- (Atovaquone 1500 mg + pyrimethamine 25 mg + leucovorin 10 mg) po once daily (CIII)

### PNEUMOCYSTIS JIROVECI PNEUMONIA (PCP)

#### (Continued)

#### Secondary Prophylaxis: (Continued)

##### Discontinuation of Secondary Prophylaxis:

- Consider in patients who have completed initial tx, remain free of signs and symptoms of disease, and CD4 > 200 for > 3 months in response to ART (BII)
- If episode of PCP occurred at CD4 > 200 consider continuing PCP prophylaxis for life (CIII)
- Restart if CD4 < 200 (AIII)

### SYPHILIS<sup>16</sup>

16. See the STD Guidelines: [www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=35](http://www.cdc.gov/std/treatment/2010/STD-Treatment-2010-RR5912.pdf#page=35) for management of penicillin-allergic patients and alternatives to preferred therapy. Penicillin is always preferred in managing syphilis in HIV-infected patients.

#### Primary, Secondary, Early-Latent (< 1 year):

- Benzathine penicillin G 2.4 million units IM x 1 dose (AII)

#### Late-Latent (> 1 year or unknown duration) or Late-Stage (tertiary-cardiovascular or gummatous disease):

- CSF examination to rule out neurosyphilis
- Benzathine penicillin G 2.4 million units IM qweek x 3 doses (AIII)

#### Neurosyphilis (Including otic and ocular):

- Aqueous crystalline penicillin G 18-24 million units per day IV divided q4h or via continuous infusion x 10-14 days (AII) ± benzathine penicillin G 2.4 million units IM qweek x 3 doses after completion of IV tx (CIII)

### TOXOPLASMOSIS

#### Acute Treatment:

##### Preferred:

- Pyrimethamine 200 mg po x 1 dose then 50 mg (< 60 kg) or 75 mg (≥ 60 kg) po once daily + sulfadiazine 1000 mg (< 60 kg) or 1500 mg (≥ 60 kg) po q6h + leucovorin 10-25 mg po once daily (AI) x ≥ 6 weeks depending on response (BII)

##### Alternative:

- Pyrimethamine/leucovorin (dose as in 'Preferred', above) + clindamycin 600 mg IV or po q6h (AI) **or**
- TMP/SMX 5 mg/kg of TMP IV or po bid (BI) **or**
- Atovaquone 1500 mg po bid + pyrimethamine/leucovorin (dose as in 'Preferred', above) (BII) **or**
- Atovaquone 1500 mg po bid + sulfadiazine 1000 mg (< 60 kg) or 1500 mg (≥ 60 kg) po q6h (BII) **or**
- Atovaquone 1500 mg po bid (BII) **or**
- Pyrimethamine/leucovorin (dose as in 'Preferred', above) + azithromycin 900-1200 mg po once daily (BII)

#### Chronic Maintenance Therapy:

##### Preferred:

- Pyrimethamine 25-50 mg po once daily + sulfadiazine 2000-4000 mg po daily (in 2-4 divided doses) + leucovorin 10-25 mg po once daily (AI)

##### Alternative:

- Clindamycin 600 mg po q8h + pyrimethamine 25-50 mg + leucovorin 10-25 mg po once daily (BI). Should add additional agent to prevent PCP (AII) **or**
- Atovaquone 750 mg po q6-12h ± [(pyrimethamine 25 mg po once daily + leucovorin 10 mg po once daily) **or** sulfadiazine 2000-4000 mg po daily (in 2-4 divided doses)] (BII)

##### Discontinuation of Secondary Prophylaxis:

- Consider if successfully completed tx, asymptomatic, and CD4 > 200 for > 6 months in response to ART (BI)
- Some recommend MRI for proof of brain lesion resolution before stopping secondary prophylaxis
- Restart if CD4 < 200 (AIII)

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